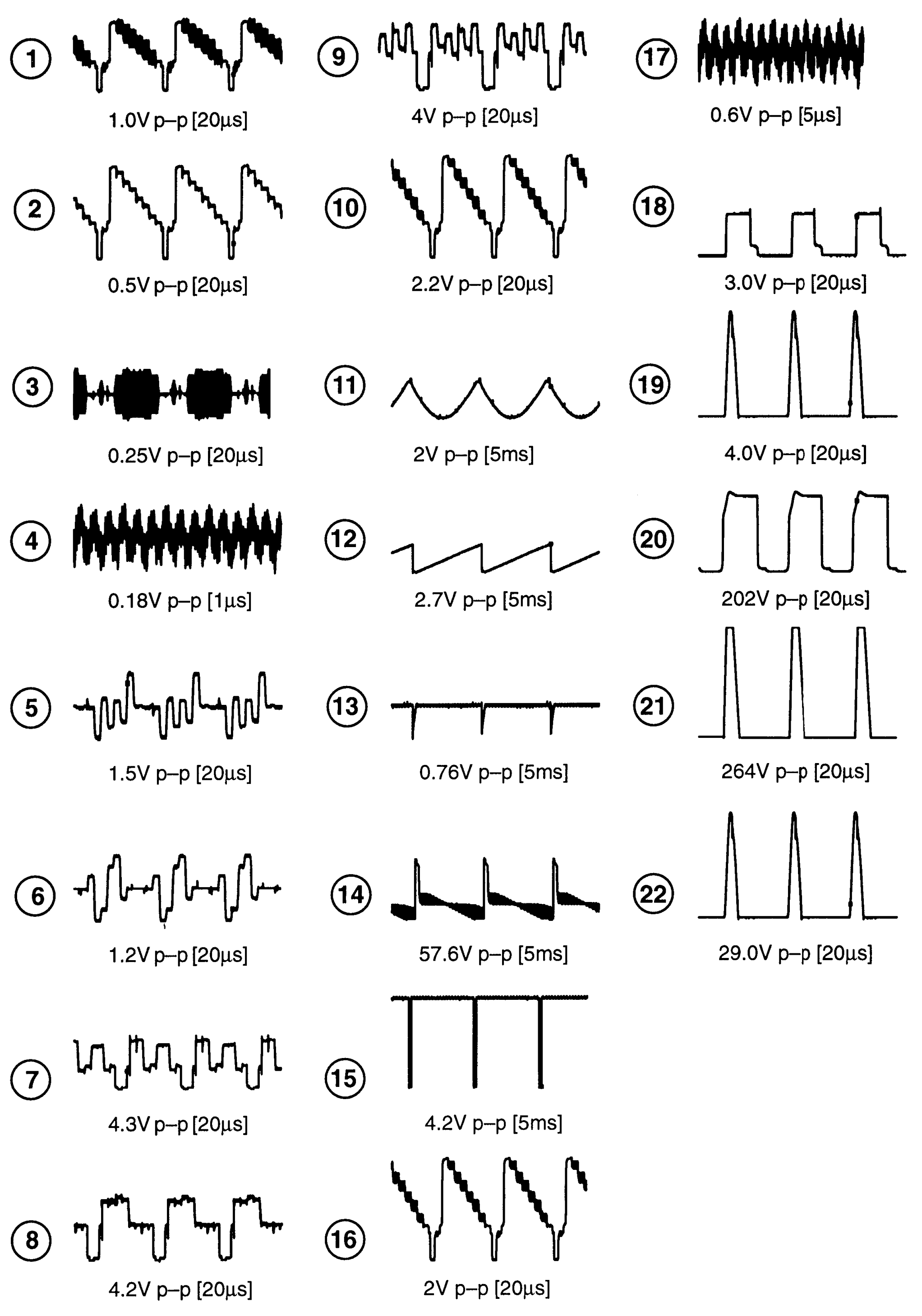
A–Board Schematic (CT–2742SFT/T1)

Waveforms – A–Schematic



Waveform Measurements

1. ③ indicates waveform measurement. (Measurement can be taken at best accessible location in common to indicated point.)
2. Taken with a NTSC signal generator connected to antenna terminal. (NTSC color bar pattern of 8 bars of EIA colors, 100 IRE white and 7.5 IRE black)
3. Customer Controls (Picture/Audio Menu) are set to Normalize. Volume "MIN".
4. All video and color waveforms taken with a wideband scope and a probe with low capacity (10 to 1). Shape and peak amplitudes may vary depending on type of Oscilloscope used and calibration.
5. Ground symbol ⏚ shown on waveform number indicates (Hot) ground lead connection of Oscilloscope.
   CAUTION: Incorrect ground connection of test equipment will result in erroneous readings.

These waveforms have been taken in the order of circuit flow through the various sections as follows:

VIDEO – Waveforms 1~3
COLOR – Waveforms 4~8
VERTICAL – Waveforms 9~12
HORIZONTAL – Waveforms 13~16
CRT DRIVE – Waveforms 17 & 18
POWER SUPPLY – Waveform 19 ~ 21

Schematic Notes

1. Resistors are carbon 1/4W unless noted otherwise.
2. Capacitors are ceramic 50V unless noted otherwise.
3. Coil value noted is inductance in µH.
4. Test point indicated by ●, Test point but no pin ○.
5. Components indicated with ⚠ symbol are critical parts and replacement should be made with manufacture specified replacement parts only.
6. ━ **(BOLD LINES)** Indicates the route of B+ supply.
7. This schematic diagram is the latest at the time of printing and subject to change without notice.
8. Ground symbol ⏚ indicates **HOT GROUND CONNECTION** and ⏚ indicates COLD GROUND CONNECTION.

NOTE: All other component symbols are used for design engineering purposes.

Voltage Measurements

1. Voltage measurement:
   - AC input to Receiver is 120V. NTSC generator connected to antenna of Receiver. (color bar pattern of 100 IRE white and 7.5 IRE black.)
   - All Picture and Audio adjustments set for Normalize.
     TV ANT/CABLE – (Set–Up Menu) in TV/ANT Mode
     Volume – Min
     TV/Video SW – TV position
   - Voltage readings are nominal and may vary ±10% on active devices.
     Some voltage reading will vary with signal strength and picture content.
   - Supply voltages are all nominal.
2. Ground symbol ⏚ indicates ground lead connection of meter. **Caution: Incorrect ground connection will result in erroneous readings.**

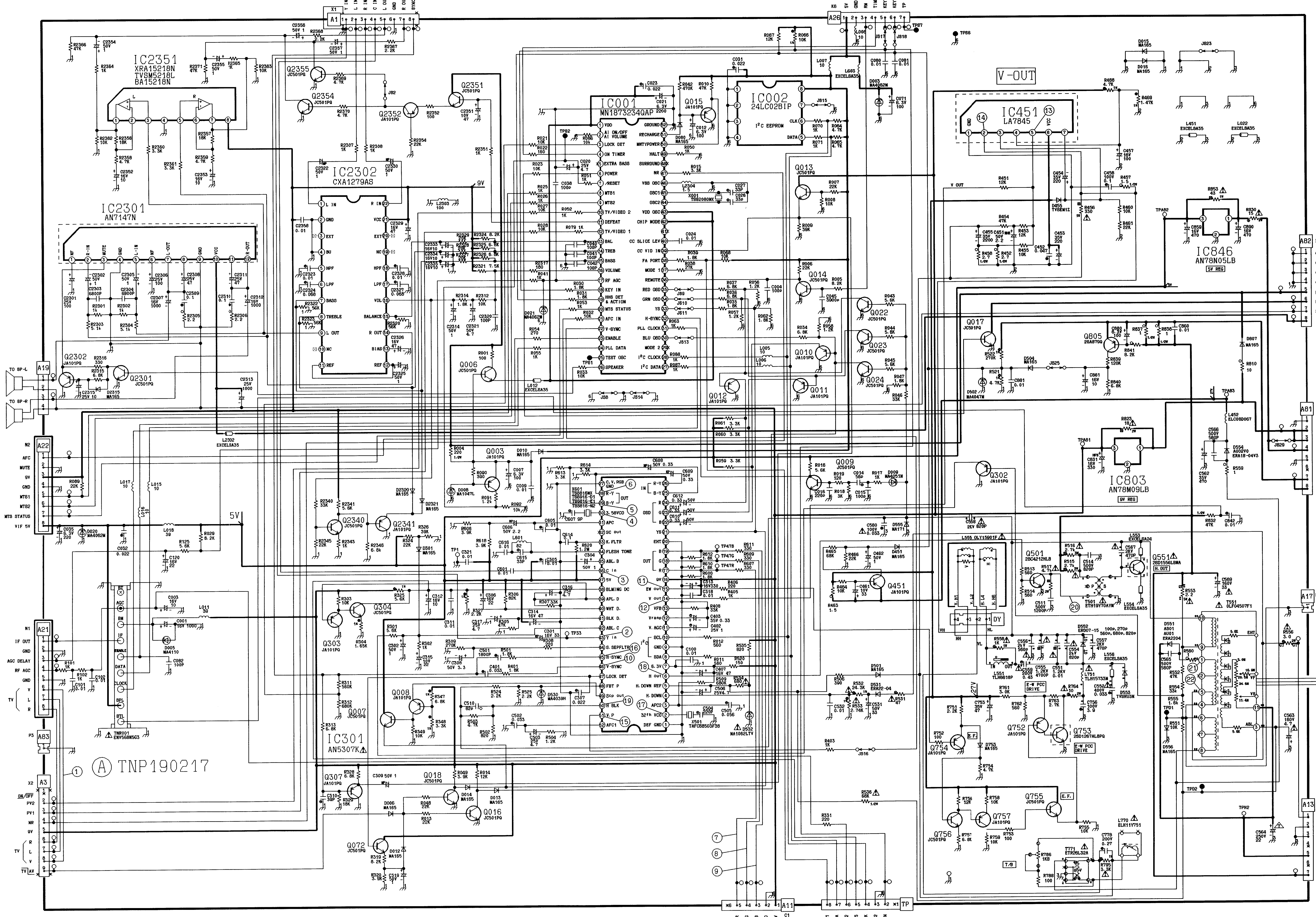
Note: Stereo Models

The Functions listed below are activated by a DC voltage change to DAC Inputs (Pin 18 and 19) of MPU IC001. Press and hold a function button on Receiver to take voltage readings.

FUNCTION	PIN 18	PIN 19
POWER	0V~0.6V	0V(Set "OFF") 0.7V~3.0V (Set "ON")
VOL◀	0.7V~1.2V	0.7V~3.0V
VOL▶	1.3V~1.8V	0.7V~3.0V
CH▼	1.9V~2.4V	0.7V~3.0V
CH▲	2.6V~3.0V	0.7V~3.0V
TV/VIDEO	3.2V~3.7V	0.7V~3.0V
ACTION	4.6V~5.0V	0V~0.6V

The AUDIO MODES being broadcast are displayed on screen in red by the voltage change to DAC input (Pin 20) of MPU IC001.

AUDIO MODE BROADCAST	PIN 20
MONO	4.0V~5.0V
SAP	2.3V~4.0V
STEREO	1.0V~2.0V
STEREO & SAP	0V~0.9V



Voltage Chart – A–Board

Integrated Circuits (ICs)

IC001

Pin	V	Pin	V
1	4.9	27	4.7
2	3.0	28	4.7
3	3.0	29	0.6
4	4.9	30	0
5	4.9	31	4.5
6	4.9	32	4.6
7	4.9	33	0
8	4.9	34	0
9	4.9	35	0
10	0	36	0
11	0	37	0
12	0	38	4.9
13	3.4	39	1.7
14	3.5	40	1.6
15	3.5	41	0
16	0.1	42	4.9
17	2.5	43	4.9
18	5.0	44	2.5
19	2.5	45	2.4
20	4.6	46	0
21	2.3	47	4.8
22	4.1	48	0
23	0.1	49	0
24	4.5	50	4.9
25	2.4	51	4.9
26	0	52	0

IC002

Pin	V
1	0
2	0
3	0
4	0
5	4.7
6	4.7
7	0
8	4.9

IC301

Pin	V	Pin	V
1	0	27	0
2	2.0	28	2.7
3	2.1	29	2.7
4	2.4	30	2.0
5	5.8	31	2.4
6	1.1	32	4.6
7	6.2	33	4.7
8	4.7	34	3.2
9	0	35	2.9
10	4.7	36	2.0
11	1.9	37	4.9
12	1.2	38	2.2
13	0.5	39	0.6
14	1.9	40	3.0
15	4.2	41	4.0
16	8.8	42	3.1
17	2.7	43	3.6
18	2.7	44	2.6
19	2.6	45	2.0
20	0	46	2.1
21	0.2	47	5.7
22	2.6	48	0.5
23	2.8	49	0.7
24	2.4	50	0.4
25	4.0	51	4.0
26	4.0	52	4.1

IC451

Pin	V
1	0
2	15.4
3	28.7
4	2.1
5	2.1
6	27.9
7	2.4

IC803

Pin	V
1	12.6
2	0
3	8.9

IC846

Pin	V
1	9.9
2	0
3	4.9

IC2301

Pin	V
1	1.2
2	0
3	17.9
4	0
5	0
6	1.2
7	9.4
8	0
9	0
10	18.1
11	20.9
12	9.1

IC2302

Pin	V	Pin	V
1	4.4	12	2.5
2	0	13	4.4
3	4.4	14	4.4
4	0	15	2.5
5	4.5	16	3.0
6	4.5	17	4.5
7	2.6	18	4.5
8	2.6	19	0
9	4.5	20	4.4
10	0	21	8.8
11	2.5	22	4.4

IC2351

Pin	V
1	4.4
2	4.4
3	4.4
4	0
5	4.4
6	4.4
7	4.4
8	8.8

Transistors

Ref.	b	c	e
Q003	4.7	5.6	5.6
Q006	5.6	9.3	4.9
Q007	0.2	4.9	0.1
Q008	2.8	0.2	0.7
Q009	0	4.6	0
Q010	0	0	0.6
Q011	0	0	0.6
Q012	0	0	0.6
Q013	1.5	8.8	1.7
Q014	0.6	0	0
Q015	4.9	0	4.9
Q016	0.6	0	0
Q017	0.7	0.1	0
Q018	0.6	0	0
Q022	0	0	0
Q023	0.1	0	0
Q024	0	0	0
Q072	5.7	8.8	5.1
Q302	2.5	0	2.9
Q303	0.5	0	1.1
Q304	1.1	2.2	0.6

Ref.	b	c	e
Q307	1.6	0	2.2
Q451	27.8	0	28.3
Q501	0.3	103.2	0
Q551	–0.2	149.0	0
Q752	5.4	0.5	6.0
Q753	0.5	17.3	0
Q754	4.2	0	4.9
Q755	6.0	27.9	5.4
Q756	4.3	21.2	3.7
Q757	21.2	6.0	21.8
Q805	140.2	0	140.6
Q2301	0	17.9	0
Q2302	17.9	0	17.9
Q2340	1.1	5.6	0.6
Q2341	5.6	0	3.1
Q2351	0	11.3	0
Q2352	0	–1.4	0
Q2354	1.4	0	0
Q2355	1.2	0	0

IMPORTANT SAFETY NOTICE

THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES THAT ARE IMPORTANT FOR PROTECTION FROM X–RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFACTURERS SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS DESIGNATED WITH A ⚠ IN THE SCHEMATIC.

Tuner Voltage Chart

Enable, Data, and Clock have no DC readings. They are digital signals from the MPU.

NOTE: Voltage at the 30V test pin varies with channel selection. Refer to chart for sample tuning voltages of TV/CATV(CABLE) channels as shown.

Voltage Reading Are Nominal And May Vary ± 15%

– VHF –	
Ch. 02	4.0V
Ch. 06	8.2V
Ch. 07	7.0V
Ch. 13	9.3V

– UHF –	
Ch. 14	7.7V
Ch. 69	24V

– CABLE –					
1st Band		2nd Band		3rd Band	
Ch. 1	6.7V	Ch. 16	4.5V	Ch. 47	3.7V
Ch. 15	24.7V	Ch. 46	2.70V	Ch. 94	14.9V
Ch. 95	9.8V			Ch. 100	15.1V
Ch. 99	17.5V			Ch. 125	24.0V

MICROPROCESSOR PROGRAMMING FOR BAND TUNING/SWITCHING

54MHz ◀——▶ 130MHz ◀——▶ 360MHz ◀——▶ 806MHz

	FIRST TUNING BAND	SECOND TUNING BAND	THIRD TUNING BAND
VHF	02~06	07~13	
UHF			14~69
CABLE	01~06,14,15,95~99	07~13,16~46	47~94,100~125

NOTE: CABLE channel numbers as recommended by the joint EIA/NCTA Engineering Committee and published as EIA INTERIM STANDARD NO. 6 – CABLE TELEVISION CHANNEL IDENTIFICATION PLAN – MAY 1983.